



09/783,151.

Cof

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Proctor et al.

SERIAL NO.: 09/783,151

PATENT NO.: 6,836,504 B2

FILED: February 14, 2001

ISSUED: December 28, 2004

DOCKET NO.: CE08880R

ENTITLED: METHOD AND APPARATUS FOR SPREADING SYMBOLS IN A
COMMUNICATION SYSTEM

Certificate of Mailing
Date of deposit: January 24, 2005
I hereby certify that this paper is being deposited with the United States Postal Service on the date indicated above, via First Class Mail with sufficient postage attached thereto, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
Nanette Orr
Signature of Person Mailing Paper
Nanette Orr
Printed Name of Person Mailing Paper

REQUEST FOR A CERTIFICATE OF CORRECTION UNDER 37 CFR § 1.322Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450Certificate
FEB 03 2005
of Correction

Sir:

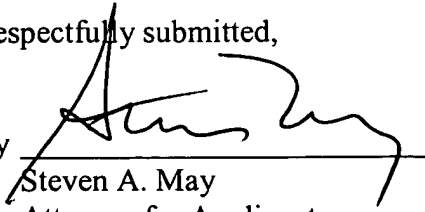
In accordance with the provisions of 37 CFR § 1.322 of the Rules of Practice, which implement 35 USC § 254, the Patent and Trademark Office is respectfully requested to issue a Certificate of Correction in the above-identified patent. It is certified that errors appear in the above-identified patent as shown in the attached Certificate of Correction. Applicant certifies that the errors are of a minor character and were not the fault of Applicant. Since the changes necessary to correct these errors in the patent would not constitute new matter, and would not require re-examination, Applicant prays a Certificate of Correction will issue. Since errors were not the fault of Applicant, it is believed that there will not be a fee for this Certificate of Correction.

4 FEB 2005

Motorola, Inc.
Customer No.: 22917

Respectfully submitted,

By



Steven A. May
Attorney for Applicants
Registration No. 44,912
Phone: 847-576-3635

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.: 6,836,504 B2
DATE: December 28, 2004
INVENTOR(S): Proctor et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 7, line 56, after "transmission" delete "rate."

MAILING ADDRESS OF SENDER;
Motorola Law Department
IL01-3rd Floor
Schaumburg, Illinois 60196

PATENT NO. 6,836,504 B2

No. of additional copies



which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

FEB 2005

7

3. The method of claim 1 wherein the step of determining the transmission rate comprises the step of determining the transmission rate when the transmission rate is taken from the group consisting of at least an eighth, half, and full transmission rate.

4. The method of claim 1 wherein the step of spreading data with the spreading code comprises the step of exclusive OR'ing the input data with the spreading code to form a transmission rate dependent spread sequence.

5. The method of claim 1 wherein the step of determining the transmission rate comprises the step of determining a voice coder (vocoder) transmission rate.

6. The method of claim 1, wherein receiving input data comprises receiving input data at a voice transmission rate from a group of full rate, half rate, eighth rate, wherein determining the transmission rate comprises determining whether the voice transmission rate is an eighth rate, and wherein determining a spreading code comprises, when the voice transmission rate is an eighth rate, determining an eight bit spreading code comprising an eight bit non-zero codeword.

7. A method for decoding data, the method comprising the steps of:

receiving input data;

determining a plurality of spreading codes, wherein each spreading code of the plurality of spreading codes has a length and value associated with a respective transmission rate of a plurality of potential transmission rates, wherein the value of each spreading codes of the plurality of spreading codes is uncorrelated with a value of other spreading codes of the plurality of spreading codes that are associated with other transmission rates of the plurality of potential transmission rates, and wherein each spreading code of the plurality of spreading codes is not user dependent;

despreading the input data with each spreading code of the plurality of spreading codes to form a plurality of despread data sequences;

decoding each despread data sequence of the plurality of despread data sequences with a respective decoder associated with the same transmission rate as the spreading code used to despread the data to form a plurality of output data sequences; and

determining a transmission rate of the received data base on the plurality of output data sequences.

8. The method of claim 7 wherein the step of despreading the input data with each spreading code comprises the step of demodulating the input data with a one-bit code when the spreading code is associated with a full transmission rate.

9. The method of claim 7 wherein the step of determining a plurality of spreading codes comprises the steps of determining a first spreading code that has a length and value associated with a half rate transmission and determining a second spreading code that has a length and value associated with an eighth rate transmission rate.

10. The method of claim 7 wherein the step of despreading the input data comprises the step of exclusive OR'ing the input data with each spreading code of the plurality of spreading codes to form a plurality of despread data sequences.

11. The method of claim 7 wherein the step of determining a transmission rate comprises the step of determining a voice coder (vocoder) transmission rate.

12. An apparatus comprising:

means for receiving input data at a transmission rate of a plurality of pre-determined transmission rates;

8

means for determining the transmission rate of the received input data from among the plurality of pre-determined transmission rates;

a code generator outputting a spreading code, wherein the spreading code has a length and value associated with the transmission rate and wherein the value is uncorrelated with values of spreading codes associated with other transmission rates and is not user dependent; and exclusive OR'ing circuitry having the spreading code and data as an input, and outputting spread data spread by the spreading code to form a transmission rate dependent spread sequence.

13. The apparatus of claim 12 wherein the transmission rate is taken from the group consisting of eighth rate, half rate, and full rate transmission.

14. The apparatus of claim 12 wherein the transmission rate is a voice coder (vocoder) transmission rate.

15. An apparatus for decoding received data comprising: a rate determiner;

a first despreader having the data as an input and outputting the data exclusive OR'd with a first spreading code having a first value and a first length;

a second despreader having the data as an input and outputting the data exclusive OR'd with a second, different spreading code having a second value and a second length;

a first Viterbi decoder having the data exclusive OR'd with the first spreading code as an input and outputting decoding metrics to the rate determiner;

a second Viterbi decoder having the data exclusive OR'd with the second spreading code as an input and outputting decoding metrics to the rate determiner; and wherein the rate determiner determines a transmission rate of the data based on the decoding metrics output by the first Viterbi decoder and second Viterbi decoder.

16. The apparatus of claim 15 wherein the first despreader is a $\frac{1}{2}$ rate despreader.

17. The apparatus of claim 16 wherein the second despreader is a $\frac{1}{4}$ rate despreader.

18. The apparatus of claim 17 wherein the first Viterbi decoder is a $\frac{1}{2}$ rate Viterbi decoder.

19. The apparatus of claim 15 wherein the second Viterbi decoder is a $\frac{1}{4}$ rate Viterbi decoder.

20. The apparatus of claim 15 wherein the rate determiner is a voice encoder (vocoder) rate determiner.

21. An apparatus comprising:

a convolutional encoder having data as an input and outputting convolutionally encoded data; and

a symbol spreader having the convolutionally encoded data and a transmission rate as an input and outputting spread symbols, wherein the spread symbols are spread with a spreading code that has a length and value associated with the transmission rate and wherein the value is uncorrelated with values of spreading codes associated with other transmission rates and is user dependent.

22. The apparatus of claim 21 further comprising:

a block interleaver having the spread symbols as an input and outputting interleaved spread symbols.

23. The apparatus of claim 21 wherein the transmission rate is taken from the group consisting of full, half, quarter and eighth rate transmission.

24. The apparatus of claim 21 wherein the transmission rate is a voice coder (vocoder) transmission rate.

* * * * *